

### **REMARKS**

Claims 26-50 were pending in this application. Claim 26 has been amended to further clarify the scope of the invention. No claims have been added or cancelled. Accordingly, claims 26-50 remain in this application.

#### **Rejections under 35 U.S.C. § 112**

Claim 26-50 stand rejected under 35 U.S.C. §112, first paragraph, for lack of enablement. On page 13 of the Final Office Action dated March 11, 2010, the Examiner maintains that the added limitations defining the terms “musculoskeletal” and “strains” are not enabled by the specification and that it would be unreasonable to limit the terms to the definitions offered by Applicants in the previously-submitted §1.132 Declarations. The Examiner has cited medical dictionary definitions for the aforementioned terms, but has indicated that Applicants can provide secondary evidence that shows how a person having ordinary skill in the art would construe the term “musculoskeletal strains” differently from the dictionary definition set forth by the Examiner.

Accordingly, Applicants hereby submit a Declaration Under 37 C.F.R. § 1.132 of inventor Dr. Markus Heller, having a doctorate in human biology, and employed by the Julius Wolff Institute in the Center for Sports Knowledge and Medicine in Berlin, Germany. Dr. Heller attests that:

[t]he present invention relates to the art of biomechanics: e.g. [0010], [0017], [0049], [0050] etc.

The art of Biomechanics is expressly focused on „The application of mechanical laws to living structures“ (Dorland’s Medical Dictionary, 29th edition, 2000). Furthermore, within the European Society of Biomechanics, Biomechanics is defined as “The study of forces acting on and generated within a body and of the effects of these forces on the tissues, fluids or materials used for diagnosis, treatment or research purposes” ([www.esbiomech.org](http://www.esbiomech.org)). This is an official body representing artisans in the field of Biomechanics and an authority in the field.

It follows that the obvious interpretation of the term “strain” for an artisan in the art of Biomechanics is therefore specific within the context of mechanics.

The obvious meaning of “strain” in a mechanical context is a proportional dimensional change or deformation and is measured as the total elongation per unit length of material due to some applied stress or loading (see e.g. “Theory of Elasticity” Timoshenko & Goodier 1951, “Biomechanics” Fung 1993, “Finite Element Methods” Zienkiewicz & Taylor 2002, Mosby’s Dental Dictionary, Wikipedia etc.).

Dr. Heller then concludes, with respect to the Examiner's rejection, that

In this art, there is no broad interpretation of "strain". For an artisan in the field of Biomechanics, this meaning specifically excludes any aspect of movement or "kinematics", as used in U.S. Patent No. 6,205,411 DiGioia, III et al.

[t]herefore, it would be improper to attribute a broader meaning to the term "strain" within the context of this invention. In other words, the term "strain" in the claims, for example, cannot encompass the unspecific non-biomechanical aspects such as over exercising or filtering. Furthermore, the term "strain" describes a specific mechanical concept that is distinct from "kinematics". For an artisan knowledgeable in the field these two terms cannot be used interchangeably.

Dr. Heller also addresses the Examiner's citation to the definition of "musculoskeletal" in Dorland's Medical Dictionary on page 15 of the Final Office Action. Specifically:

[t]he definition of the term "musculoskeletal" was, in fact, broader rather than too limited, than would be obvious in the field of Biomechanics. In this aspect, the obvious definition of the word "pertaining to or comprising the skeleton and muscles, as musculoskeletal system" (Dorland's Medical Dictionary) is not only correct, but also suitable to this invention.

In other words, the dictionary definition of musculoskeletal encompasses a musculoskeletal system, as skeletons and muscle comprise such as system. In any case, when the definition of "musculoskeletal" is taken in the context of the aforementioned description and definition of a "strain" as is known in the art, "musculoskeletal strains" are deformations to a bone or muscle of the musculoskeletal system that causes injury or weakening of a joint or tissue, as has now been clarified in independent claim 26.

Applicants respectfully submit that claim 26 is enabled. Applicants have amended the specification to include the added limitations of claim 26. Accordingly, Applicants respectfully submit that claim 26 meets the written description requirement. Reconsideration of all §112 rejections is respectfully requested.

Rejections under 35 U.S.C. 102(b)

Claims 26, 27, 31-38, and 40-50 stand rejected under 35 U.S.C. § 102(b) for anticipation by U.S. Patent No. 6,205,411 to DiGioia, III et al. (hereinafter "the DiGioia patent"). Based on the foregoing evidence for the accepted definitions and understanding of the contested terminology, via the submitted Declaration, Applicants respectfully submit that the DiGioia patent fails to disclose, among other things, the claimed aspect of "automatically determining individual musculoskeletal strains from the determined musculoskeletal

parameters of the patient, wherein the individual musculoskeletal strains are deformations to a bone or a muscle of the musculoskeletal system of the patient that causes injury or weakening of a joint or tissue of the musculoskeletal system.”

Notwithstanding the foregoing, Applicants would like to respectfully note that the Examiner has not addressed how the DiGioia system compares individual musculoskeletal parameters with musculoskeletal reference parameters that have been filed *in a strain database*, as is required in the pending claims. As discussed in Applicants’ response of December 22, 2009, the Examiner asserts that Applicants’ “limitations” (i.e., “experimental” strain values and “size of the femur, the tibia, the range of motion, the different angles between body members”) on which it relies are not stated in the claims. However, Applicants have not amended the claims to cover these limitations and do not rely on them for purposes of defining over the DiGioia patent. Applicants provide these “limitations” only as examples of the types of musculoskeletal parameters that may be accounted for by the database. Claim 26 requires, among other things, that individual musculoskeletal parameters of a person are used to find experimental strain values in a database corresponding to these individual musculoskeletal parameters and then using these experimental values from the database as individual musculoskeletal strain values for the person. Applicants submit that the Examiner is simply pointing to the “comparison” aspect of the DiGioia patent (i.e., calculated range of motion being compared to predetermined range of motion) without regard to the other limitations of the claims.

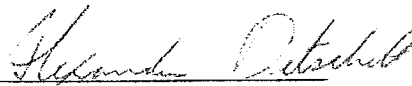
For the foregoing reasons, Applicants believe that the subject matter of independent claim 26 is not anticipated by the DiGioia patent. Dependent claims 28-30 stand rejected for obviousness over the DiGioia patent in view of asserted inherency of the claimed steps. Claim 39 stands rejected for obviousness in view of the DiGioia patent in view of U.S. Pat. Pub. App. No. 2005/0203504 to Wham et al. Claims 27-50, encompassing the claims rejected for obviousness depend from and add further limitations to independent claim 26 and are believed to be patentable for at least the reasons discussed hereinabove in connection with independent claim 26. Applicants respectfully request that the Examiner withdraw both the anticipation and obviousness rejections.

**CONCLUSION**

Based on the foregoing remarks, reconsideration of the rejections and allowance of pending claims 26-50 are respectfully requested.

Respectfully submitted,

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